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ABSTRACT

A study was conducted to identify institutional effectiveness measures for different mission areas of Yavapai College in Prescott, Arizona, by defining appropriate student cohorts and outcomes indicators. Cohorts and outcomes indicators were considered for the following community college mission areas: (1) access, demonstrated by comparing all Yavapai College students with Yavapai County census information; (2) lifelong learning, determined by the course completion ratio of students defined as lifelong learners and by course satisfaction ratings; (3) developmental education, for which indicators included numbers of students advised into developmental courses based on placement test scores, numbers enrolled to improve basic skills, comparison of numbers advised into and enrolled in developmental courses, and course passing rates of developmental students; (4) transfer education, for which outcomes were determined by the number of former students currently attending Arizona State University (ASU), Northern Arizona University (NAU), the University of Arizona (UA), or other Arizona community colleges; and (5) vocational education, for which outcomes were determined through ratios of enrollment versus success in vocational courses, and completion rates for degree and certificate programs. The study revealed that fall 1993 and spring 1994 Yavapai student enrollments reflected the 1990 census distribution. Of those students defined as lifelong learners, 81% completed their classes with average satisfaction rating of 4.58 on a five-point Likert scale. During the 1991-92 academic year, 256 former Yavapai students attended ASU, 789 attended NAU, 197 attended UA, and 1,373 students attended other Arizona community colleges. Most students completed the vocational courses that they attempted. Contains 29 references. (KP)

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Meaningful Cohorts and Outcome Indicators of Institutional Effectiveness for a Community College

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Abstract:

Community colleges offer classes, programs, and support services that address broad mission areas including transfer education, vocational education, general education, developmental education, lifelong learning, and community service. In developing indicators of institutional effectiveness it is important that the appropriate students be considered depending on the mission area. Meaningful cohorts must be defined as part of the process of defining outcome indicators.

This research project considered institutional effectiveness for different mission areas of a community college. Cohorts and outcome indicators were considered relating to community college access, lifelong learning, developmental education, transfer education, and vocational education. The goal of the project was to define appropriate cohorts and indicator measures to be used in an institutional effectiveness model.

Collecting accurate information about students' educational goals can be a challenge, especially when students' goals are self-declared as in a community college with a system of open admissions. Institutional effectiveness programs must identify the proper cohorts of students who participate in various educational programs as part of the process of developing and analyzing indicators intended to represent expected outcomes of the students' educational experiences. Then measurement information provided to the community college allows review of its programs and reflects whether students' educational objectives are being met.

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TABLE OF CONTENTS

		Page
I.	INTRODUCTION	1
	Definition of Terms	1
	Background	2
	Research Problem	3
	Assumptions and Limitations	4
II.	REVIEW OF THE LITERATURE	5
	Institutional Effectiveness in General	5
	Assessment Related to Main Community College Mission Areas	6
III.	METHODOLOGY	9
	Research Design	10
	Population and Sample	11
	Methods and Instruments	11
	Procedures	13
IV.	FINDINGS	14
	Community College Access	14
	Lifelong Learning	14
	Developmental Education	18
	Transfer Education	21
	Vocational Education	21
	Discussion	24
V.	CONCLUSIONS and RECOMMENDATIONS	27
BIBLIOGRAPHY		30

LIST OF TABLES

		Page
Table 1.	Demographics Comparison	15
Table 2.	Residency Comparison	16
Table 3.	Lifelong Learning Indicators	17
Table 4.	Reason for Taking Developmental Courses	19
Table 5.	Developmental Education Indicators	20
Table 6.	Transfer Students to Other Arizona Community Colleges	22
Table 7.	Vocational Program Areas	25
Table 8.	Vocational Education Indicators	26

I. INTRODUCTION

Regulations and assessment activities are requiring that colleges and universities perform an increasing amount of tracking and reporting of their students "success rates". To be useful as part of an institutional effectiveness system, it is important that meaningful cohorts be identified indicating who the students are that participate in the programs, and that appropriate measures be defined representing the expected outcomes of the students' educational experiences.

Community colleges serve broad missions including transfer education, vocational education, developmental education, and lifelong learning. Community college students have diverse educational goals and many students change their objectives while at the community college. Determining the true educational goals of community college students is a challenge. A large number of part-time students attend community colleges, making the definition of meaningful cohorts and outcomes measures especially difficult. Existing tracking requirements (Student Right to Know and Carl Perkins) request information on stratified populations of students, not the entire student population at the institution. These results do not address the community college's question of how well the institution is doing. "If assessment is to have any real impact on higher education, it must directly link student achievement to both the structure and content of the educational program and to the effectiveness of teaching" (North Central Association, 1993-1994, p.26). It is important that cohorts and indicator measures used for institutional effectiveness provide appropriate information for the community college to analyze its programs and determine whether students' educational objectives are being met.

Definition of Terms

Institutional Effectiveness is defined by the National Alliance of Community and Technical Colleges (as cited in Grossman & Duncan, 1989) as "the process of articulating the mission of the college, setting goals, defining how the college and community will know when these goals are being met, and using the data from assessment in an ongoing cycle of planning and evaluation" (p.5).

Indicator, "usually referred to as a key indicator, is that data set, or set of statistics that best verifies the accomplishment of a specific objective. Associated with this should be an agreed to kind of measurement and a standard for accomplishment" (McLeod & Atwell, 1992, p.34).

Student Outcome is "any change or consequence occurring as a result of enrollment in a particular educational institution and involvement in its program" (Ewell, 1983, p.11).

Assessment is "the systematic basis for making inferences about the learning and development of students" (Erwin, 1991, p.15).

Educational Goals at a community college are "the outcomes the students intend to achieve at the time of registration, including education for a job, self-interest, the first 2 years of college, and/or attaining a certificate, diploma, or degree" (Grossman & Duncan, 1989, p.10).

Lifelong Learning. Courses taken by students for self-fulfillment to continue development of their knowledge and skills; includes special-interest courses (Yavapai College, 1993-1994).

Developmental Education. Basic skills courses supporting and preparing students' ability to succeed in college-level courses and programs (Yavapai College, 1993-1994).

Transfer Education. First two years of baccalaureate-parallel and pre-professional courses for students transferring to other institutions; includes coursework concentrated in general education (Yavapai College, 1993-1994).

Vocational Education. Preparation for entry-level employment or advancement in a variety of technical, professional, and occupational fields (Yavapai College, 1993-1994).

Full-Time Student. Students taking 12 or more credit hours in a regular semester (fall/spring).

Part-Time Student. Students taking less than 12 credit hours in a regular semester (fall/spring).

Cohort. Group of students satisfying some specified criteria; this group of students will be tracked regarding their educational accomplishments and resulting outcomes. "Initially student cohorts are defined by type of student and the time of initial entry into the institution" (Howard & Rogers, 1991, p.64).

Background

"It has become increasingly important to know the extent to which educational goals are being achieved and the institutional purpose fulfilled" (Baker & Roberts, 1989, p.56). In determining the effectiveness of an institution, its intended goals must be compared to results achieved. At community colleges, indices of student success include more than graduates of degree and certificate programs.

Community colleges serve broad missions and offer a variety of courses aimed towards students intending to transfer to a four-year university, students seeking vocational education, students needing to develop and improve their basic skills, and students taking classes for personal interest in lifelong learning. "Information on student educational goals is vital if two-year colleges are to meaningful access and demonstrate their effectiveness" (Walleri, Seybert & Cosgrove, 1992, p.29). When asked for their intended major, more students respond that they want a degree or certificate than ever graduate. Some of these same students will also respond that they are taking classes in a particular semester for personal interest, which raises questions about their real educational goals. Students who use the community college to explore options

and determine their area(s) of interest often change their "major". Consideration also needs to be given to those students who want to learn skills and knowledge to obtain a job, but do not plan to earn a certificate or degree.

Community colleges have an open door access and only a few programs, such as nursing, have formal admission requirements. Tracking students within the different academic programs at the community college is another challenge. Students may take developmental courses, liberal studies or other prerequisite classes before they ever take a course in their major area of study. If a student self-declares their major, it is unfair to track the student in the major until the student is actually admitted to the respective program, such as nursing, or is making progress in taking courses for that program. Prior to that time, their educational experiences in that community college only reflect the developmental or general education components of the institution.

A large number of students attend community colleges part-time. Excluding these students from tracking cohorts leaves a low number of students as an indication of how the college programs are doing. Yet inclusion of part-time students should provide some means of distinguishing the students by their various educational goals as will be reflected by their outcomes.

Some students in higher education drop in / drop out, depending on their educational needs and circumstances. They may attend for a period of time then stop because of work, family or other conflicts. When their situation has changed these people may return to continue their original educational goals or to pursue different goals. Time gaps need to be dealt with in tracking these students and their outcome achievements.

Since the American society is very mobile, many students transfer in and out of colleges and universities. To give credit for success or failure of a student to just one college or university that a student attends (e.g., the first attended) is undeserved. The student's higher education experience is a combination of all colleges and universities attended.

Research Problem

In an institutional effectiveness model, community college students should be evaluated against the various aspects of the community college's mission: transfer education, vocational education, developmental education, and lifelong learning. The mobility of students needs to be included in the model. How students enter the various community college programs includes students new to higher education, transfer into the institution, and changing major area of study or long term educational goal (degree, certificate, job skills, or personal interest) within the institution. Student outcomes include changing to another major area of study or long term educational goal within the institution, completion of a degree or certificate, transfer to another

college or university (2-year or 4-year), employment, and completion of basic skills development or personal interest courses.

This research project considers the indicators of institutional effectiveness for Yavapai College. Yavapai College is a two-year public community college in central Arizona. It serves all of Yavapai County, an expansive rural area which covers 8,123 square miles and has a population of approximately 110,000 residents. The main campus is located in Prescott, where classes were first offered in Fall 1969. A branch campus is located in Clarkdale, where classes began in Fall 1975. In addition, extension classes are offered in several of the remote communities throughout the county. The Fall 1993 enrollment at Yavapai College was 5898 students, with a full-time equivalent (FTE) of 2366.

Assumptions and Limitations

This project does not assess the effectiveness of individual programs (i.e., consider their specific detailed goals and objectives), courses, or instructors' teaching. It only considers effectiveness of the main institutional mission areas. Assessment activities of a college should include outcomes at multiple levels using multiple measures, and this project is not intended to be a sole indicator of how well the community college is meeting the students' educational needs.

This project assumes that the student outcomes reflect the students' educational experiences at this institution. Outside influences including attitudinal characteristics, scholastic abilities, and previous higher education, are not analyzed.

Summary

The goal of student tracking is to evaluate the "success" of students in achieving their educational goals through the individual college or university programs. "A student-success approach begins with student intentions" (Kreider & Walleri, 1988, p.48). Both the cohort definitions and the attributes analyzed for outcomes of the students' educational experiences are important in determining the effectiveness of an institution. In creating assessment models, institutions must also ask "What kind of information do we really want to collect, what will we do with the information once we get it, and how will we use it" (Mentkowski, 1991, p.262). Yavapai College is concentrating on its assessment processes and indicators of institutional effectiveness in all areas and is involving faculty, administration, support staff, and students.

II. REVIEW OF THE LITERATURE

"At the most fundamental level, the community college quality movement is focused on four deceptively simple questions: (1) What are we trying to achieve?, (2) How good a job are we doing?, (3) How do we know how good a job we are doing?, and (4) How do we improve?" (Yavapai College, 1994, p.77).

Institutional Effectiveness in General

Student outcomes assessment involves measuring how students' knowledge and skills obtained from participating in an institution's programs and courses meet the objectives expected. "Unlike four-year institutions ... community colleges cannot point to the number of annual graduates as a valid measure of institutional effectiveness. Rather, community colleges must, in part, rely on attainment of individual educational objectives, student satisfaction with various aspects of their community college experience, success in the workplace subsequent to completion of a course of study, and other such indices."(Conklin, 1990, p.349)

"Community colleges across the nation have generally been asked to find their own way when making choices about effectiveness, and their actions have varied greatly depending on accreditation region, pattern of state coordination, local history, and institutional characteristics" (American Association of Community Colleges, 1994, p.5). Because each institution has a different mission, their institutional effectiveness programs will be different. It is important to acknowledge "that not all community colleges - and certainly not all institutions of higher education - are attempting to achieve the same thing" (Moore, 1986, p.52).

Institutional effectiveness models should be derived from the mission of an institution. Nichols (1991) describes the following components in his Institutional Effectiveness Paradigm: "(a) the institution establishes an expanded statement of purpose; (b) academic and nonacademic departments identify statements of intended ... outcomes and ... objectives which are linked to and support the expanded institutional statement of purpose; (c) assessment of the extent to which departmental and program statements of intended outcomes or objectives is accomplished; and (d) the results of assessment are utilized both to determine the extent to which departmental intentions have been met ... and to improve departmental and programmatic operations" (p.11). The Arizona Community Colleges Task Force on Institutional Effectiveness Measures states that "the effectiveness of a community college ... is defined in terms of how well it addresses the following elements of the community college mission: access, transfer, economic

development / workforce development, community development, and return on investment" (SBDCCA, 1994, p.3-4).

Assessment Related to Main Community College Mission Areas

Many community college assessment plans include measures in the main mission areas of academic transfer/general education, technical/vocational education, and community service/ continuing education.(Alfred & Kreider, 1991; Altieri, 1990; Conklin, 1990; Friedlander & MacDougall, 1990; Hockaday & Friga, 1989; Hudgins, 1993) The Community College Roundtable suggests core indicators grouped in six mission headings including Student Progress (student goal attainment, persistence, degree completion rates), Career Preparation (placement rate in the work force, employer assessment of students), Transfer Preparation (number and rate who transfer, performance after transfer), Developmental Education (success in subsequent related coursework) and General Education (American Association of Community Colleges, 1994, p.10-12).

Community College Access / Lifelong Learning:

"The basic responsibility of community and technical colleges is to ensure all citizens of their communities the availability of post-secondary education services" (Grossman & Duncan, 1989, p.7) "Access is described in terms of how extensively the institution serves all of the citizens of its service region. Measures of access include the percentage of the population that is served in some manner within the year, the degree to which economic and geographic obstacles to participation are addressed by the college, and the degree to which members of various ethnic and economic groups are served."(SBDCCA, 1994, p.2)

Lifelong learners include persons who take credit classes for personal interest and persons who take non-credit classes offered by the community college. Indicators of students accessing the community college for lifelong learning include enrollment counts and course completion rates of those persons.

Developmental Education:

Community colleges are concerned with the numbers of students seeking basic skills or recommended to take developmental courses based on placement testing. Effectiveness measures for developmental education include "number and percent of remedial students enrolled in the required remedial courses, number and percent of students who successfully complete the final level of remediation in each skill area, ... passing rates in subsequent skill-related college-level courses, percent of students achieving grade point averages of 2.0 or higher

in college-level courses, and percent of students who persist in college" (Friedlander & MacDougall, 1990, p.96).

Transfer Education:

"Traditionally, the role of the community college has been to provide its students with the availability to make effective transition to 4-year colleges and universities" (Grossman & Duncan, 1989, p.7). "The number of students transferring to a four-year college or university and the subsequent success of those students ... should be tracked systematically" (SBDCCA, 1994, p.2).

Many community college students also transfer to other two-year colleges. They should be included when considering the effectiveness of transfer education. For students transferring to both two-year and four-year colleges and universities, outcomes measures include number of units taken at the "sending" institution, effectiveness of course transfers to the "receiving" institution, course success (GPA) at the subsequent institution, and degree attainment.

Vocational Education:

"Central to the purposes of community and technical colleges is preparing the work force of the future and increasingly retraining workers for the present" (Grossman & Duncan, 1989, p.7). "These programs are designed to result in employment or vocational outcomes for students. A program is successful if it helps students to find, or keep employment or if it helps them to advance in an occupation" (Frank, 1994, p.1). Vocational students include those who earn a degree or certificate and those who just take a few vocational classes to develop job skills. The impact of community college activities which provide occupational education can be demonstrated by "completion rates of students enrolled in vocational courses; numbers of occupational certificate and degree recipients; and pass rates of students taking certification or licensure examinations" (SBDCCA, 1994, p.7). Other indicators include employment in related field and employers' satisfaction.

Several college and university systems are accessing state labor databases for matches against identified students to determine if the students are employed, whether the employment is related to the students' educational training received at the interested institution, and if the student's wages increase after completing their courses/programs (Frank, 1994; Walleri, 1990). These efforts involve considerable coordination between agencies, and go beyond the scope of this research project.

Summary

"The question 'How effective is our institution?' ... depends on the criteria selected for evaluation" (Moore, 1986, p.55). A primary focus of institutional effectiveness should be on student learning and development. "The emerging questions for ... assessors focus on what the students have done or achieved as a result of having experienced the institution" (Nedwek & Neal, 1994, p.77).

III. METHODOLOGY

The Yavapai College mission statement includes the traditional community college areas of transfer education, vocational education, developmental education, and lifelong learning (Yavapai College, 1993-94):

> A college in the Arizona State Community College System, Yavapai College fulfills its mission in accordance with state mandate. To achieve this end, the College sets priorities to direct the implementation of its mission. The College defines its primary service area as Yavapai County.
>
> The College serves its diverse student population with quality instruction, support services, and community service programs. Through a broad range of curricula and supporting services, the College addresses the intellectual, societal, moral and emotional growth of its students.
>
> Instruction at Yavapai College emphasizes acquisition of knowledge, skills, and competencies. The College evaluates its effectiveness by assessing student development and the environment in which it occurs.
>
> To achieve the full range of this mission, Yavapai College specifically provides the following:
>
> A. TRANSFER EDUCATION:
>
> Associate of Arts and the Associate of General Studies Degrees, the first two years of baccalaureate-parallel and pre-professional courses for students transferring to other institutions.
>
> B. OCCUPATIONAL EDUCATION:
>
> Associate of Applied Science Degree for students preparing for entry-level employment or advancement in a variety of occupations; courses and certificate programs in technical, professional, and occupational fields.
>
> C. GENERAL EDUCATION:
>
> Associate of Continuing Studies Degree and courses for self-fulfillment and lifelong learning.
>
> D. DEVELOPMENTAL EDUCATION:
>
> Developmental courses and support services enhancing students' ability to succeed in college-level courses and programs.

E. STUDENT DEVELOPMENT SERVICES AND PROGRAMS:
Support services to assist students in defining and attaining educational goals and to provide personal growth and developmental experiences.

F. CULTURAL AND COMMUNITY SERVICE:
Special-interest courses and programs for community enrichment; encouragement for the use of college human and physical resources in service to its communities.

The institutional effectiveness of Yavapai College's programs will be analyzed for this project by the various mission areas of transfer education, vocational education, developmental education, and lifelong learning. These areas have different indicators and expected outcomes. The subsets of community college students who declare each of these different paths to be their educational goals are considered to be distinct.

Research Design

"Student progress toward the degree, as measured by retention and graduation rates, is most often based on the performance of cohorts of students entering the university at a given point in time. While this measure is perhaps useful for producing one indicator of over-all institutional effectiveness, it is not particularly useful to faculty who need to understand the progress rates of their majors for program improvement efforts."(Wince & Burton, 1994, p.1) University systems which examine student progress through the majors often wait until the student begins their junior year before tracking and the first two years of the students' higher education is considered to be general education in which they take their required liberal studies courses. Community colleges don't have this luxury of waiting to track students in different program areas, however, since they only offer lower-division undergraduate classes.

Tracking is defined as "the systematic gathering, analysis, and communication of information on where students have been and are now with respect to their academic skills, progress toward a degree, and subsequent employment or transfer after leaving the particular college" (Bers, 1992, p.21). Most tracking systems involve keeping longitudinal data bases of student cohorts and their educational activities for many terms. The information can thus be used "to change the focus of institutional research from such questions as 'How many students are enrolled?' ... to more telling questions, such as 'What percentage of our students meet their educational goals?' " (Palmer, 1989, p.95). "Discontinuous attendance patterns, student goals that do not include degree completion, and an increase in the number of years to degree completion have all complicated within-college student tracking" (Walleri, 1990, p.22). The effectiveness measures used and which students are assessed must be appropriate for each of the institution's mission areas considered.

Population and Sample

All students attending a community college over a select period of time are included in this institutional effectiveness model. The students are considered as a whole in evaluating whether the service area of the institution is being served (access). In assessing the college's various programs, subsets of the student enrollment are appropriately identified.

The research for this project uses student data from Yavapai College. Yavapai College is a two-year public community college in central Arizona. Students participating in classes offered at the main campus in Prescott, the branch campus in Clarkdale, and extension locations throughout Yavapai County are included.

Methods and Instruments

Community College Access:

Community colleges are concerned that they are meeting the needs of their service area. The service area for Yavapai College consists of the entire Yavapai County of Arizona, a largely rural area. Besides the two campuses in Prescott and Clarkdale, Yavapai College offers extension classes to some of the distant communities. The total enrollment at Yavapai College includes regular credit students, non-credit students, and people participating in special programs sponsored by the college district.

To demonstrate access, demographic information about all Yavapai College students will be compared to Yavapai County census information (current source is 1990 census data provided by Arizona Department of Economic Security). Attributes include gender, ethnicity, age, and residency.

Lifelong Learning:

The "success" of students who take classes for personal interest can be viewed by the number who complete the course and by their satisfaction of the course. Some students may drop a course before its completion and will have met their educational goal, but such information is not recorded at Yavapai College. Whether a student takes another course is considered an independent event as to why they enrolled during a specific semester. Future courses are considered an extension of the student's desire to pursue lifelong learning.

Counts of the number of students enrolling versus completing credit courses in semesters they indicated their reason for attending was personal interest, and counts of students taking non-credit courses, will be used as indicators for lifelong learning. Existing evaluation results from non-credit and extension classes will be used to estimate student satisfaction.

Developmental Education:

Students who take courses to build their basic skills may do so because of personal need/desire or because they were advised based on results of placement tests in English and math. At Yavapai College, only full-time students and students enrolling in their first English or math classes are required to take the placement exams. Standardized tests are used to assess their knowledge in these subjects.

Indicators for developmental education include counts of the number of students advised into developmental level courses based on their placement test scores, and the number of additional students who indicate their reason of attendance for a semester was improvement of basic skills. The number of students advised into developmental courses will be compared to the number of students who actually enroll. Those students who enroll in developmental courses will be compared to the number who complete the classes with a passing grade.

This project does not include follow-up of developmental education students and whether they took subsequent college-level courses after satisfactorily finishing their basic skills classes, or how they may have performed in such courses.

Transfer Education:

Information about students regarded as transferring from Yavapai College is currently received from the Arizona public four-year universities: Arizona State University (ASU), Northern Arizona University (NAU), and University of Arizona (UA). Unfortunately due to the mobility of students and the storage limits of the university databases, feedback is not received on all former Yavapai College students. Representatives at these universities will be contacted to inquire if comparisons can be performed against a list of Yavapai College students with information returned for all matches.

Prior to this research project, information of transferring students was only available using the data provided by ASU, NAU, and UA. This project will also evaluate students who transfer to other Arizona public two-year community colleges. A comparison will be performed using the Arizona Statewide Student Information System database to determine if any Yavapai College students enrolled at other Arizona Community Colleges.

Vocational Education:

Determining which community college students are taking vocational classes for educational goals of a degree, certificate, or job skills is a challenge. Some students indicate a vocational field of study but only take developmental or general studies classes. Considering a student to be part of a major program when they have not taken any courses in that area of study is unfair. Programs with special admissions requirements, such as nursing, should only include

those students formally admitted to the program when assessing their effectiveness, not students who may aspire to major in that field.

For this research project, students will be placed in a vocational cohort by their declared major during the first term in which they met the cohort definition. Tracking of students will be done by the different major programs to indicate whether the institution is meeting the students' educational needs by area of study. This project will use the following approach for defining meaningful vocational major cohorts: students must indicate a vocational area of study with a long term goal of earning a degree or certificate, or of obtaining job skills; and they must enroll in at least one key course in the major program area in the cohort term which they are included. Faculty input on key courses for program majors will be used to identify serious vocational students versus those exploring different fields. This process of key courses will be used since the self-declared educational intent of students is felt to be inaccurate data.

Key indicators of vocational education effectiveness include completion of the key vocational courses, completion of degree or certificate program, and transfer to four-year universities. Available employment information from new graduate surveys will be used to indicate if vocational students are employed in a position related to their field of study.

Procedures

The data collection methods and instruments proposed above are tailored to address the various mission areas of the community college. The approach does not restrict the students included for tracking by requirements such that the student be first time to higher education, be first time to the particular institution, or be attending full-time. All students participating in the various programs of the community college are appropriately included. Tracking of cohort students should be done over a five year period after the student was included in a cohort. This extended period of time accommodates part-time students as well as students who have time gaps in their attendance.

Summary

"The results of the institution's assessment of student academic achievement should provide constituencies a way to learn about the actual effectiveness of the teaching and learning within the program" (North Central Association, 1993-1994, p.27). Once the data has been collected and analyzed, the information should feedback into the system "to improve the college for the benefit of its students" (Hudgins, 1993, p.44).

IV. FINDINGS

Indicators of institutional effectiveness for Yavapai College are considered by the different mission areas offered by the community college regarding access, lifelong learning, developmental education, transfer education, and vocational education. Data available from Yavapai College student records (registration information, course progress, graduates) and student outcomes (student satisfaction, course completion, transfer feedback, and employment attainment) serve as the base to derive information.

Community College Access

A comparison of the Fall 1993 and Spring 1994 demographics of all Yavapai College students (credit and non-credit, unduplicated within each term) against the Yavapai County 1990 Census data shows that the people accessing the institution are of a mixture of ages, include a higher percentage of minorities, and the majority of students are female (Table 1). Approximately five percent of the county residents were enrolled each of these terms. When considering the city of residence within the county, the student enrollment reflects the 1990 census distribution of the Yavapai County population with some weighting towards the campus locations where the majority of classes are offered (Table 2).

Lifelong Learning

Students taking classes at Yavapai College for the purpose of lifelong learning include all persons taking non-credit courses, and persons taking credit courses as part of the retirement college or for personal interest goals (Table 3). The retirement college courses at Yavapai College are not intended for transfer but are offered for persons seeking personal enrichment; these courses are graded satisfactory/unsatisfactory and no final exam is given. During the Fall 1993 and Spring 1994 terms, 95% of the non-credit students completed their classes, 80% of the retirement college students completed their classes, and 74% of the personal interest (non-retirement) students completed their classes.

Student feedback on Yavapai College courses is solicited in many classes. One question asked of the adult non-credit students is "overall satisfaction with class" using a five-point Likert scale ranging from 5=very satisfied to 1=very dissatisfied. Of 562 non-credit responses received in 1993-1994, the average satisfaction rating was 4.78.

	Yavapai County		Yavapai College Credit and Non-Credit Students			
	1990 Census Population		Fall 1993 Enrollment		Spring 1994 Enrollment	
	107,714		6,401		6,651	
Age						
Under 20	25,552	23.7%	1,201	18.8%	1,044	15.7%
20-24	4,884	4.5%	919	14.4%	973	14.6%
25-29	5,357	5.0%	483	7.5%	552	8.3%
30-39	14,740	13.7%	1,096	17.1%	1,177	17.7%
40-49	12,697	11.8%	1,052	16.4%	1,182	17.8%
50-59	11,659	10.8%	624	9.7%	657	9.9%
60 or over	32,825	30.5%	1,026	16.0%	1,066	16.0%
Ethnic						
White	98,499	91.4%	5,320	83.1%	5,547	83.4%
Hispanic	6,617	6.1%	296	4.6%	286	4.3%
Am. Indian	1,764	1.6%	212	3.3%	193	2.9%
Asian	492	0.5%	59	0.9%	67	1.0%
Black	244	0.2%	41	0.6%	37	0.6%
Other	98	0.1%	473	7.4%	521	7.8%
Gender						
Female	55,182	51.2%	4,069	63.6%	4,088	61.5%
Male	52,532	48.8%	2,332	36.4%	2,563	38.5%
Residency						
Inside County			5,250	82.0%	5,701	85.7%
Other AZ County			554	8.7%	494	7.4%
Other State			342	5.3%	405	6.1%
Other Country			55	0.9%	51	0.8%

Table 1. Demographics Comparison

	Yavapai County		Yavapai College Credit and Non-Credit Students				
	1990 Census Population			Fall 1993 Enrollment		Spring 1994 Enrollment	
	107,714			6,401		6,651	
Bagdad	1,858	1.7%	Bagdad	54	0.8%	70	1.1%
Black Canyon City	1,811	1.7%	Black Canyon City	43	0.7%	74	1.1%
Camp Verde	6,243	5.8%	Camp Verde	219	3.4%	242	3.6%
Chino Valley	4,837	4.5%	Chino Valley	361	5.6%	356	5.4%
Clarkdale	2,144	2.0%	Clarkdale	112	1.7%	135	2.0%
Cornville	2,089	1.9%	Cornville	98	1.5%	105	1.6%
Cottonwood	5,918	5.5%	Cottonwood	588	9.2%	667	10.0%
Cottonwood - Verde Village	7,037	6.5%					
Dewey - Humboldt	3,640	3.4%	Dewey	161	2.5%	158	2.4%
			Humboldt	15	0.2%	16	0.2%
Jerome	403	0.4%	Jerome	27	0.4%	33	0.5%
Lake Montezuma	1,841	1.7%	Lake Montezuma	16	0.2%	16	0.2%
Prescott	26,455	24.6%	Prescott	2,782	43.5%	2,845	42.8%
Prescott Valley	8,858	8.2%	Prescott Valley	513	8.0%	507	7.6%
Sedona	7,720	7.2%	Sedona	259	4.0%	246	3.7%
			West Sedona	21	0.3%	19	0.3%
Big Park	3,024	2.8%	Village Oak Creek	5	0.1%	19	0.3%
remainder	23,836	22.1%	unknown Yavapai County	0	0.0%	1	0.0%
			Ash Fork	8	0.1%	4	0.1%
			Congress	11	0.2%	3	0.0%
			Cordes Lakes	1	0.0%	1	0.0%
			Kirkland	10	0.2%	10	0.2%
			Mayer	67	1.0%	83	1.2%
			Paulden	15	0.2%	14	0.2%
			Rimrock	29	0.5%	43	0.6%
			Seligman	6	0.1%	9	0.1%
			Skull Valley	14	0.2%	11	0.2%
			Wilhoit	0	0.0%	0	0.0%
			Yarnell	14	0.2%	13	0.2%
			Other AZ County	554	8.7%	494	7.4%
			Other State	342	5.3%	405	6.1%
			Other Country	55	0.9%	51	0.8%

Table 2. Residency Comparison

Yavapai College	Fall 1993		Spring 1994	
Non-Credit Enrollment	425		674	
Retirement Enrollment	1,100		1,075	
Personal Interest Enrollment	1,900		1,883	
Non-Credit Classes Attempted	526		862	
Non-Credit Classes Completed	504	95.8%	810	94.0%
Retirement Classes Attempted	1,381		1,324	
Retirement Classes Completed	1,105	80.0%	1,050	79.3%
Pers. Int. Classes Attempted	3,476		3,202	
Pers. Int. Classes Completed	2,505	72.1%	2,411	75.3%

Table 3. Lifelong Learning Indicators

Students taking retirement college or personal interest credit courses are mixed with the academic seeking students at Yavapai College. Student feedback is requested in extension classes and some on-campus credit classes. Students taking classes offered at Yavapai College extension locations predominantly represent lifelong learners. Of the 772 Fall 1993 extension students, 648 (84%) indicated retirement college or personal interest as their reason for attending. In Spring 1994, 588 of the 726 extension students (81%) indicated this interest. The Fall 1993 student feedback included the question "overall, the course was stimulating and contributed to your knowledge" using a five-point Likert scale ranging from 5=strongly agree to 1=strongly disagree. Of 391 responses, the average satisfaction rating was 4.50. The Spring 1994 student feedback included the five-point Likert scale question "the course content matches the stated purpose of the course (objectives)" ranging from 5=strongly agree to 1=strongly disagree. Of the 385 responses, the average satisfaction rating was 4.58.

Developmental Education

Students enrolled in developmental courses at Yavapai College include those recommended based on their English and math placement exam scores, and those having a personal need to improve their basic skills. Table 4 gives a breakdown of the primary reason for students enrolled in developmental courses during the Fall 1993 and Spring 1994 terms. Students with an unknown reason may have taken the placement exams but their student records may contain a different student identification number than recorded with their scores (due to errors or incomplete placement exam information).

At Yavapai College only full-time students and students enrolling in their first English or math courses are required to take the placement exams. Testing for the Fall 1993 and Spring 1994 terms of students who subsequently enrolled at Yavapai College included 1192 students in writing (English), 1109 students in reading, and 1168 students in math. Of these students, 55% were recommended to take developmental writing courses, 35% were recommended to take developmental reading courses, and 81% were recommended to take developmental math courses. Table 5 shows the enrollment and completion rates of the students who took the placement exams in the following Yavapai College developmental courses:

ENG060	Basic Writing Skills
ENG100	Introductory Composition
RDG029	Individualized Reading Improvement
RDG030	Intermediate Reading Improvement
RDG031	Advanced Reading Improvement
MTH030	Fundamentals of Mathematics
MTH037	Beginning Algebra

Yavapai College
1993-94

Developmental Areas	Enrolled in Dev. Course	% Enroll by Placement	% Enroll by Self Need	% Enroll by Other/Unk.	Completed Dev. Course	% Complete
ENG	586	80%	1%	18%	387	66%
RDG	300	66%	1%	33%	219	73%
MTH	1,124	56%	2%	42%	686	61%

Table 4. Reason for Taking Developmental Courses

Yavapai College
1993-94

Courses	Placement Recommend.	Enrolled in Dev. Course	% Enroll Dev./ Recommend.	Completed Dev. Course	% Complete / Enroll Dev.
ENG060	101	67	66%	37	55%
ENG100	559	404	72%	227	56%
ENG101	525				
ENG103	7				
	1192	471		264	56%
RDG029	57	28	49%	19	68%
RDG030	105	78	74%	54	69%
RDG031	229	93	41%	58	62%
no RDG reqd.	718				
	1109	199		131	66%
MTH030	498	354	71%	208	59%
MTH037	449	275	61%	181	66%
MTH130	157				
MTH131	50				
MTH151	14				
	1168	629		389	62%

Developmental Courses	Self Need; No Placement Taken	Enrolled in Dev. Course	Completed Dev. Course	% Complete
ENG060		2	2	100%
ENG100		5	4	80%
		7	6	86%
RDG029		0	0	
RDG030		1	1	100%
RDG031		1	0	0%
		2	1	50%
MTH030		11	5	45%
MTH037		9	4	44%
		20	9	45%

Table 5. Developmental Education Indicators

College-level courses which students may also be recommended to take based on their placement exam results are:

ENG101	College Composition I
ENG103	College Composition I - Honors
MTH130	Intermediate Algebra
MTH131	College Algebra
MTH151	Calculus and Analytic Geometry I

Transfer Education

A match was performed of students who attended Yavapai College during 1990-1994 (for reasons other than personal interest and retirement college) against data available from the other Arizona public community colleges and the public Arizona state universities. Student identification numbers were used to compare records in the Arizona Student Information System database, which contains information on all students who attended the various Arizona community colleges. Since the existence of this database is fairly new and the information is still being loaded, the data for the 1991-92 academic year was used as it was the most complete. A total of 1373 Yavapai College students were found to have attended other Arizona community colleges during 1991-92 (Table 6). Some of the students attended more than one community college during that academic year. Information about the students' area of study, units taken, and GPA was incomplete and was not evaluated.

During the 1991-92 academic year, 256 former Yavapai College students attended Arizona State University, 789 students attended Northern Arizona University (only Fall data available), and 197 attended the University of Arizona. The counts are based on feedback information received from the three state Arizona universities based on their records of the students' previously attended institution(s).

Vocational Education

Students taking vocational courses at Yavapai College include people seeking a certificate or degree in the related program, people seeking to develop or expand their job skills, as well as people taking the courses for personal interest. In assessing the vocational programs, key courses are used to identify students pursuing the related vocational areas beyond a basic introductory level in combination with the students self-declared educational goals (reported on the registration forms). Students identified as retirement college participants or attending for personal interest are not included in this assessment in order to focus on the support of the Yavapai College programs with those students having vocational educational and employment goals.

Arizona Community College	1991-92 Transfers	
Arizona Western College	0	
Central Arizona College	50	
Cochise College	21	
Coconino Community College *	620	
Eastern Arizona College	27	
Maricopa County Community Colleges:	679	
Chandler-Gilbert Community College		24
Estrella Mountain Community College		7
GateWay Community College		38
Glendale Community College		156
Mesa Community College		128
Paradise Valley Community College		34
Phoenix College		113
Rio Salado Community College		63
Scottsdale Community College		101
South Mountain Community College		15
Mohave Community College	51	
Northland Pioneer College **	-	
Pima Community College	0	

* Coconino Community College began in 1991;
Yavapai College previously served this area

** Northland Pioneer College data file was bad

Students Attending More Than One Arizona Community College in 1991-92

Central & Coconino	1
Central & Eastern	1
Central & Maricopa	2
Cochise & Coconino	1
Coconino & Maricopa	9
Eastern & Maricopa	3
Maricopa (two different colleges)	55
Maricopa (three different colleges)	2
Maricopa & Mohave	1

Table 6. Yavapai College Students Attending Other Arizona Community Colleges

The following Yavapai College key vocational courses are considered:

Accounting	any 200 level ACC course
Admin. of Justice	any AJS course
Architectural Graphics	ITC121 (Architectural Graphics I) or ITC123 (Architectural Graphics II)
Automotive	AUT122 (Automatic Trans/Transaxle), AUT123 (Brakes), AUT124 (Manual Drive Train and Axles), AUT125 (Heating and Air Conditioning), AUT126 (Suspension and Steering), AUT131 (Engine Performance), AUT132 (Electrical Systems), or AUT151 (Engine Repair)
Business	any 200 level BSA course
Computers	any 200 level CIS course
Construction	ITC141 (Construction Technology I) or ITC151 (Construction Technology II)
Emergency Medical Svcs.	EMS131 (Emergency Medical Technician), EMS231 (Intermediate Emergency Medical Technician I) or EMS232 (Intermediate Emergency Medical Technician II)
Fire Science	any FSC course
Graphic Design	ART131 (Graphic Design I) or ART132 (Graphic Design II)
Gunsmithing	GST130 (Basic Gunsmithing) or GST131 (Basic Gunsmithing)
Law Enforcement	any PCP course
Manufacturing	MET120 (Manufacturing Product Planning I), MET122 (Manufacturing Product Planning II), MET148 (Manufacturing Processes), or MET152 (Manufacturing Production Systems I)
Nursing	NSG117 (Nursing I; students must be admitted to Nursing program)
Office Administration	any 200 level OAD course
Paralegal	any LAW course except LAW100 and LAW101
Welding	WLD130 (Oxyacetylene), WLD140 (Arc I), WLD145 (Arc II), or WLD156 (Blueprint Reading)

When considering those students with educational goals of earning a certificate or degree and those students wanting to build job skills, most students completed the key vocational courses attempted (Table 7). To further assess vocational education indicators at Yavapai College, cohorts of students were formed for the various program areas by including students who took a key vocational course during the 1993-94 academic year, self-declared an educational goal with a consistent area of study, and completed at least 6 units at Yavapai College by the end of Spring 1994 (thus part-time students were included but those students who only took one course were not included). Persistence of the cohort students is measured by whether they enrolled in any Fall 1994 course at Yavapai College (Table 8). Some of the cohort students received a certificate or degree from Yavapai College during the 1993-94 academic year (Table 8), although since the programs are designed to take one to two years of full-time study most students are not expected to have graduated yet.

Discussion

The outcome indicators evaluated in this research project are intended to convey information about the effectiveness of Yavapai College as an institution in regards to its mission areas. It is important that the appropriate subsets of students be assessed under each of the components of the institutional effectiveness model. Assessment is an on-going process, and this research project is just one activity. Yavapai College is addressing the diverse educational needs of its students through its various mission areas and corresponding offerings. Meaningful cohorts and outcomes indicators need to be continuously reviewed in regards to institutional effectiveness. This research project added insight to those efforts, especially in defining how vocational education students should be identified.

Summary

"Students choose programs that enable them to fulfill important personal objectives" (Ewell, 1983, p.21). "For the community college, whose students are a diverse array of adults with a variety of personal educational goals, it is crucial that assessment also provide information regarding student educational intent and the extent to which students are actually realizing their own aspirations" (McClenney & McClenney, 1988, p.54).

Yavapai College
Credit Courses

Vocational Areas	Fall 1993 Enroll	Complete	% Complete	Spring 1994 Enroll	Complete	% Complete
Accounting	31	26	84%	23	20	87%
Administration of Justice	5	2	40%	43	39	91%
Architectural Graphics	10	8	80%	5	5	100%
Automotive	56	41	73%	55	43	78%
Business	136	105	77%	208	172	83%
Computers	52	37	71%	33	19	58%
Construction	13	10	77%	14	10	71%
Emergency Medical Svcs.	52	40	77%	88	74	84%
Fire Science	113	94	83%	116	101	87%
Graphic Design	8	6	75%	9	8	89%
Gunsmithing	24	23	96%	19	14	74%
Law Enforcement	11	11	100%	11	11	100%
Manufacturing	10	9	90%	14	12	86%
Nursing	58	55	95%			
Office Admininistration	171	74	43%	150	80	53%
Paralegal *	29	25	86%	115	96	83%
Welding	24	16	67%	42	20	48%

* Paralegal program began Fall 1993

Table 7. Vocational Program Areas

Yavapai College

Vocational Areas	1993-94 Cohort	Persist Fall 1994		Cert./Deg. Graduate	
Accounting	25	13	52%	4	16%
Administration of Justice	36	4	11%	0	0%
Architectural Graphics	6	3	50%	0	0%
Automotive	23	10	43%	2	9%
Business	129	65	50%	12	9%
Computers	29	10	34%	7	24%
Construction	15	5	33%	1	7%
Emergency Medical Svcs.	69	17	25%	2	3%
Fire Science	93	37	40%	3	3%
Graphic Design	8	5	63%	1	13%
Gunsmithing	21	14	67%	4	19%
Law Enforcement	13	9	69%	0	0%
Manufacturing	9	4	44%	1	11%
Nursing	56	51	91%		
Office Admininistration	105	40	38%	17	16%
Paralegal *	35	26	74%	0	0%
Welding	8	2	25%	0	0%

* Paralegal program began Fall 1993

Table 8. Vocational Education Indicators

V. CONCLUSIONS and RECOMMENDATIONS

In the process of performing this research project, several kinds of data of interest were found to be unavailable or nonexistent at Yavapai College. Recommendations and requests for data collection and access are being made. Ideas for expanding institutional effectiveness assessment are also being discussed.

Institutional effectiveness is an important activity at community colleges. It's significance needs to be communicated to the students so they will understand the purpose of assessment activities they encounter during their educational experiences. A statement regarding institutional assessment requirements should be included in the General Catalog. This statement should advise students that their inputs will be requested (especially via surveys), that their educational progress will be tracked, and that their outcomes will be followed-up as indicators of whether their educational goals were supported by the community college programs.

Cohort definitions should consider characteristics about the students when they enter the college programs as well as outcomes information about what happened to the students. Entry mode categories for community college students can include: first time to higher education; transferred with 0-11 units; transferred with 12+ units; have previous degree; or have work experience related to major. Information about students' previous higher education experiences is currently only collected on the Yavapai College Application for Admission, a form which is not used by all students due to the college's open access. For students who do submit the form, the information is not entered into the on-line system but is only kept on paper in their permanent file. If a student transfers units from another college or university to Yavapai College, the courses and grades are recorded in the on-line system, but in a form that is not easily retrieved for analysis. Collection of information about previous degree(s), last college or university attended, and dates of attendance via the Yavapai College Registration Form, with entry in retrievable on-line format, should be considered so that a student's entry-mode status to the community college programs can be analyzed.

It is realized that the educational goals of community college students may change as their personal needs change. The cohort group a student is assigned to should change when a student revises their educational goals so that the outcomes measured reflect their redirected efforts. Progress within the major program should consider the influence of developmental courses; credit load per term or academic year; time gaps between terms of attendance; and completion of major program classes. Exit outcomes from a major program can include: changed

to another major at same institution; revised long term educational goals among earning a degree or certificate, obtaining work skills, or learning for personal interest; transferred to another institution (2-year or 4-year); graduated with degree or certificate; obtained employment (related or unrelated to major); and completed course.

Associated with this research project, requests were made to representatives at Arizona State University (ASU), Northern Arizona University (NAU), and the University of Arizona (UA) to perform a match on a list of students who attended Yavapai College during 1990-94 against their university student databases. The requests are still being processed by the university personnel. When the results are received, an analysis will be conducted to determine if the feedback data currently provided by ASU, NAU, and UA of students they recognized transferred from Yavapai College includes the same matched students. If not, an attempt will be made to determine why differences exist.

Follow-up of community college students who transfer to other colleges and universities needs to be expanded at Yavapai College. Whenever a student requests a transcript, the information is currently logged into a record file. Retrieving and sorting this information is non-trivial, however. This makes it difficult to determine which students may have transferred where. Ideally the transcript requests should be used as a key to locate students transferring to other colleges and universities. The accomplishments of transfer students at their next college or university also needs to be expanded. Attributes of interest include GPA at the new institution, degree attainment, and adequacy of their educational preparation by this community college.

Employment of community college students is an important indicator for vocational training. Yavapai College currently surveys its recent graduates and asks whether they are employed in a related field. This survey needs to be expanded and its processing made more specific to provide more useful information. A separate project should also follow-up on vocational students other than just Yavapai College graduates, using a random sample of students not currently enrolled and inquiring about their employment status with respect to their educational goals.

Low response rates of surveys raises questions about the outcomes of non-respondents, and this is of concern when assessing whether vocational programs are providing skills training needed for employment. Relying on the satisfaction of a few known employers in addition to student responses still represents a limited base. Many colleges throughout the nation are using their state employment departments to obtain information about students' employment. Since Yavapai County is a rural area, it is expected that many students move elsewhere to seek desirable employment. Yavapai College has not coordinated with the Arizona Department of Economic Security (DES), but such an exchange of information may provide more accurate data about students' employment status within the state of Arizona.

Since the majority of students attending Yavapai College are part-time, the tracking of students to determine what outcomes they achieve should be performed for at least 5 years after the student has been assigned to a cohort. A method of handling time gaps during student's education also need to be developed.

Suggestions are being made regarding other changes on the Yavapai College Registration Form. Only one address is currently being collected, yet both local and permanent addresses would assist in follow-up tracking of students. The areas of study do not always correspond to the institution's program offerings, causing confusion about what a student should indicate as their major. When a student should be considered part of a major program, i.e. "declaring" their educational intent, needs to be discussed and a procedures defined.

This project does not address program, course, or instructor effectiveness. Such aspects are important components of a complete institutional assessment program. Faculty should take a lead in determining how specific programs, courses, and instructors' teaching should be measured and evaluated against defined goals and objectives. Institutional Research should assist in data collection and analysis.

Summary

This project represents a beginning in defining appropriate institutional effectiveness indictors for Yavapai College. The data has already been used in various reports and requests about the institution. The data needs to be updated as new semesters occur and the assessment efforts of this community college need to be expanded as part of an overall process for instructional improvement. "By means of a thoughtful and participatory program of student-outcomes assessment, an institution can assess a wide range of programmatic impacts on its students and thus compare its actual achievements with its stated educational aspirations. Administrators have both the right and the responsibility to create accountability structures for themselves, for faculty, and for students as well, to ensure that educational outcomes most nearly approach the institution's goals."(Ewell, 1983, p.66)

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